



United States Army Medical Research and Materiel Command  
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# Future Medical Shelter System (FMSS) Update

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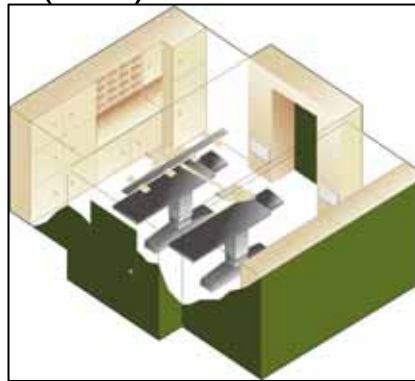
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# Future Medical Shelter System (FMSS) Update

## Description:

The Future Medical Shelter System (FMSS) is a multifaceted program designed to leverage Congressional funding to explore advanced rigid and soft-walled shelters for forward deployed healthcare providers. The scope is (1) to develop a self-contained emergency response package similar to the Forward Surgical Team concept, and (2) to develop a replacement for the Deployable Medical Systems (DEPMEDS) operating room shelter.

**Acquisition Strategy:** Full Developmental  
(Congressional Special Interest)

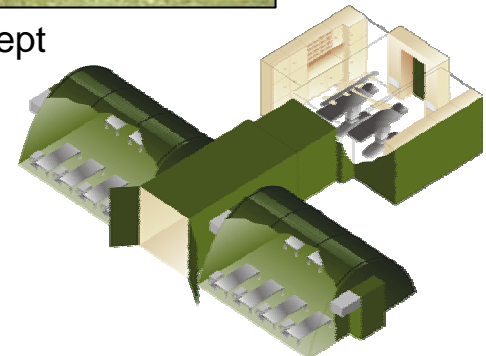
**Contractors:** Mobile Medical International Corporation, St. Johnsbury, VT; Oak Ridge National Laboratories, Oak Ridge TN; and EADS, Washington, DC.



Oak Ridge Concept



MMIC Concept



EADS Concept



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## **FMSS Deliverables**

The AMEDD has been fortunate to work on three separate initiatives, with three separate Congressionally sponsored vendors to develop multiple concepts of the FMSS.

- 1.) Contractor: Oak Ridge National Laboratories (ORNL)  
Deliverable: 3:1 Expandable DEPMEDS OR ISO (Seabox)  
60' of airbeam tentage (Vertigo, Inc.)  
Did not receive FY05 CSI Funding
- 2.) Contractor: Mobile Medical International Corporation (MMIC)  
Deliverable: 3:1 Expandable DEPMEDS OR ISO (AAR Cadillac)  
60' of airbeam tentage (Federal Fabrics, Inc.)  
Received \$5.2M in FY05 CSI RDT&E funds
- 3.) Contractor: EADS-Dornier  
Deliverable: 1) Technical Drawings of 3:1 Expandable DEPMEDS OR ISO (modified Trans-Hospital) (December 2004)  
2) Prototype OR ISO (January 2006) Received \$1.7M in FY04 CSI Funding that could not otherwise be executed



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## ORNL ISO Container, 3:1 Expandable

Application: DEPMEDS OR ISO replacement

Packed Dimensions: 20'x8'x8' (ISO Standard)

Expanded Dimensions: 20'x20'x8' (~ 400 sq. ft.)

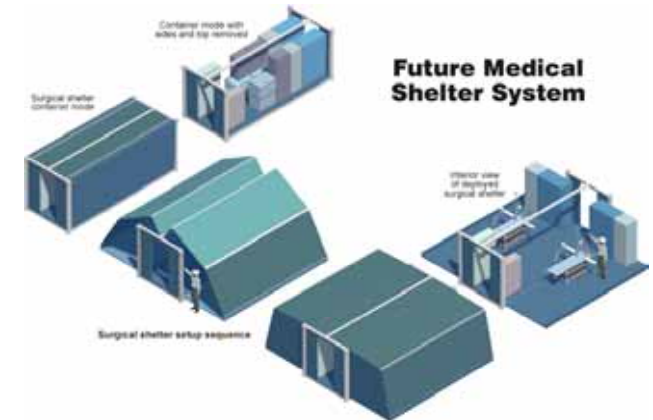
Weight: 15,000 lbs loaded; 10,700 lbs empty

Expansion Time: 90 seconds w/ 2 personnel

Time to Operational Configuration: <10 minutes

Description:

- Can erect from 24V vehicle battery
- CB overpressure capable.
- Configured with two OR tables, all required medical equipment and supplies, integrated lighting, electrical, and medical gas plumbing.
- Requires external environmental control and power generation.



Status: Prototype delivered to Ft. Detrick, MD, June 04





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## ORNL Airbeam Tentage

Contractor: Vertigo, Inc.

Application: CSH Patient Care Ward

Dimensions: 32'x20'x10' (approx. 640 sq. ft.)

Weight: 600 lbs

Expansion/Strike Time: <10 minutes w/ 2 people

Description:

- High pressure braided airbeam technology
- Chemical protection possible through external fabric replacement or internal CB liner
- Integral personnel and litter patient airlocks
- Includes lights, power distribution, thermal liner, and air distribution plenum
- Multiple modularity options and TEMPER connectivity

Status: - Prototype delivered October 2003  
- Logistics Transformation Agency evaluation, APG, Nov 04





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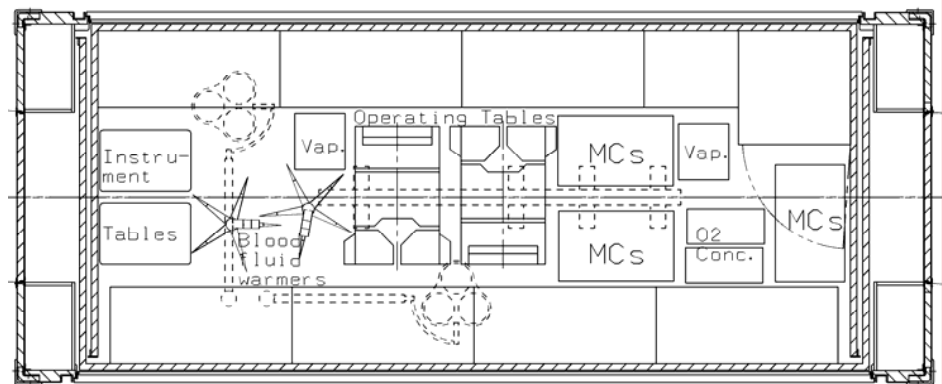
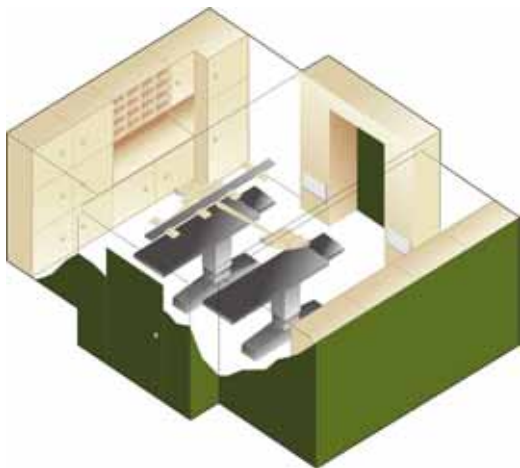
## EADS FMSS Update

**Contract signed:** 23 February 2004

### Scope of Work:

- 1) Provide developmental design drawings and associated lists for an OR module in a 2 side expandable hard shelter adapted to the needs of a CSH
- 2) Fabricate OR container and support container (Due: 4Q05)

**Status:** Final Design Review, 14 Dec 04, Ft. Detrick, MD.  
Prototype Fabrication Ongoing





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## EADS Main Features

- High degree of pre-integration using built-in case work to reduce set-up/ strike time
- Ergonomic placement and work flow for two OR teams
- Medical gas distribution system
- Goal: Provide sufficient storage to transport all required equipment and a one day supply of consumables in the shelter (exception would be drapes, surg. Inst., fluids)



Current TRANSHospital





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## MMIC FMSS Update

### Scope of Work:

The 21<sup>st</sup> CMHS is designed as two individual building blocks that can be used independently or complexed. The basic building blocks are a single hard sided two bed operating suite shelter and a secondary hard sided shelter with two integral ten bed soft sided wards for pre and post operative care.

**Status:** Universal Support Container (USC) completed June 2004

- OR and USC delivered with airbeam tentage
- FY05 effort will include prototypes without integrated generators and ECU as well as other hard wall shelters used in field hospitals



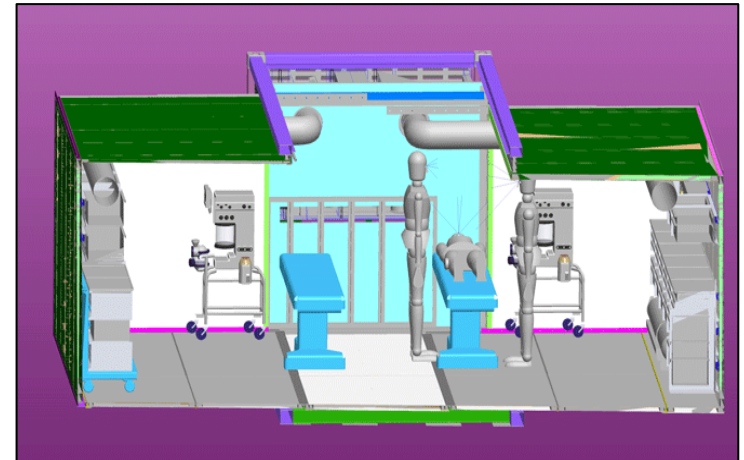


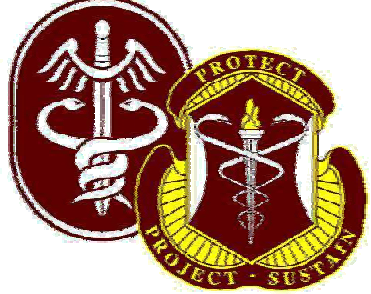
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## MMIC OR ISO Description

- Rapid set-up/strike (approximately 15 minutes)
- Integral – Generator & ECU w/ NBC Filtration
- Integral Medical Gas system w/alarm.
- Electric leveling system (w/ manual override)
- Universal Vestibule/Airlock
- LED Lighting (Background & OR Light)
- Prototype delivered February 05





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# MMIC Supply Container/Patient Wards

- Fully Integrated Soft Sided Patient Wards (2X – 600 Sq. Ft w/ 10 patient beds)
- Self sustaining for up to 72 Hrs.
  - Integral - ECU w/ NBC Filtration & Power w/Emergency System
  - Integral Medical Gas system w/alarm.
- Soft shelter (Federal Fabrics)
  - Self Erectable without exposure to outside environment within 5-7 minutes
  - New, modular frame design
  - 10' sections w/ full end complexability.
  - Frame is structurally redundant.
- Deployed at Fort Detrick, MD, July 2004





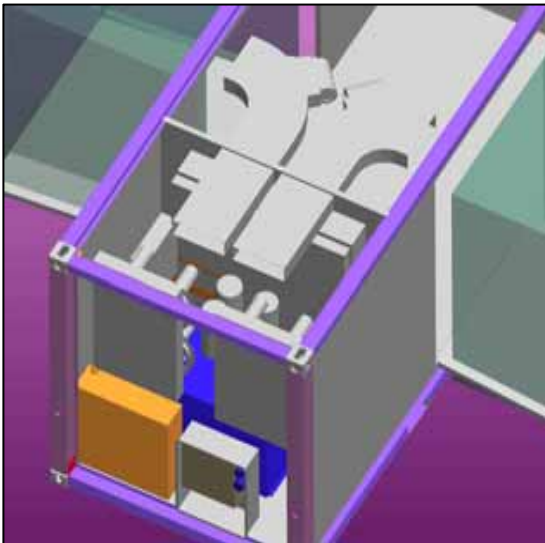
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## Universal Support System™ & Mobile Surgery Unit II™

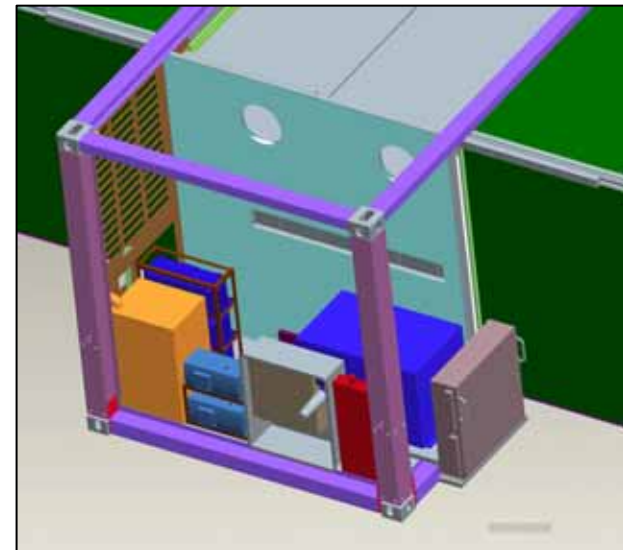
### ECU Systems:

- Staged for optimum efficiency & reliability
- Filtration HEPA in OR & 95% in Patient Wards
- Exceed minimum air change requirements
- Sealed air handling system w/NBC Filtration
- Utilization of reject generator heat
  - (10 KW in OR & 20 KW in Patient Wards)



### Power Systems:

- Integrated Diesel Generators
- Shore Connection for both AC and DC Power
- Integrated Emergency Power System







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# Current status

- MMIC and ORNL prototypes are currently being tested at Camp Bullis, Ft. Sam Houston San Antonio.
- The primary goal will be to prove the concept and gather information as for the second spiral of the development cycle
- MMIC and EADS are funded for FY05
- MMIC will be building advanced prototypes of their OR and USC as well as the other modules used in hospitals.
- EADS prototypes will be delivered in the 4Q05